CROSSTALK

News Bulletin of the TRW Amateur Radio Club

Volume 96 Number 8 September 1996

New Crosstalk Editor

This month is brought to you by a new Editor, Duane Park WA6EIK. I will do my best to keep the Crosstalk informative and entertaining. I welcome all comments, suggestions.
I intend on catering to all interests in Amateur Radio, if anyone has a special interest of theirs, and would like to contribute, please feel free to submit it to me either electronically, at "Duane@ks.trw.com" Qmail address, or, email "dspark@ix.netcom.com" , or by mail @ M3/2261BO, MS Word is the preferred format. ***NOTE: Please fill out the questionnaire in this issue!***

New and Improved Internet Home Page

Norm, N6NS, and Vice Pres. Pat, KB6YPI have invested a lot of their personal time in an effort to provide not only club members, but the entire amateur community, a tremendous resource of ham/computer related information that can be easily accessed on the world wide web. Please lend them your support in making this effort a enjoyable one.
The URL is http://192.45.100.11/w6trw/

Upcoming Events

Manhattan Beach Fair/10k run in October - Stay tuned for further details

Computer Marketplace (Computer Shows)
Admission $5.00 - Pomona $7.00 - Reseda $FREE$
September 7th - Reseda 18430 Sherman Way (free admission!)
September 8th - Buena Park 7530 Orangethrope
September 14th - Santa Barbara Earl Warren Showgrounds
September 29th - ACP Parking Lot Computer Sale (FREE) 1310 E. Edinger in Santa Ana

Other Ham Swap meets:
Inland Empire ARC - 2nd Sat. ea. mo. @ A.B. Miller High School, Walnut & Olenander in **Fontana** - Talk-in 145.480 (-600 pl=77.0hz)
CAMRA - 3rd Sat. ea. mo. @ DeVry Institute, 901 Corporate Center Dr. **Pomona** - Talk-in 146.175 (+600)
El Cajon ARC - 1st Sat. ea. mo. @ Santee Drive-in Theater, Woodside Ave. @ Hwy 67 in **Santee**

W6TRW Monthly Calendar of Events

September 1996:

Tuesday, September 3	5:30 pm	**Executive Board Meeting** O1/1210 (All Club Members are invited)
Tuesday, September 10	12:00 noon	**Club Meeting** **PICNIC at Polliwog Park**
Friday, September 20	12:00 noon	**Technical Chairman's Meeting** Building S Hamshack
Tuesday, September 24	12:00 noon	**Emergency Communications Team Meeting** R3 Emergency Operations Center
Saturday, September 28	7:00 am	**TRW/ARC Swap Meet** Marine and Aviation (Northeast Corner)
Saturday, September 28	12:00 noon	**T-Hunt** Swap Meet Parking Lot - 144.72 MHz

October 1996:

Tuesday, October 1	5:30 pm	**Executive Board Meeting** O1/1210 (All Club Members are invited)
Tuesday, October 8	12:00 noon	**Club Meeting** **Cathy's Deli**
Tuesday, October 8	12:00 noon	**Emergency Communications Team Meeting** R3 Emergency Operations Center
Friday, October 18	12:00 noon	**Technical Chairman's Meeting** Building S Hamshack
Tuesday, October 22	12:00 noon	**Emergency Communications Team Meeting** R3 Emergency Operations Center
Saturday, October 26	7:00 am	**TRW/ARC Swap Meet** Marine and Aviation (Northeast Corner)
Saturday, October 26	12:00 noon	**T-Hunt** Swap Meet Parking Lot - 144.72 MHz

Reoccurring Events:

Every Monday Night (Except the 1st & Holidays)	7:30 pm	**Disaster Communication Systems (DCS) Net** DCS Members: Check in on 2 Meter Repeater
Every Wednesday	12:00 noon	**ECT Net on 2 meter Repeater**
Every Thursday Night	6:30 pm	**TRW Amateur Radio Club Net** The Bob and ? Show - Check In on 2 Meter Repeater
Every Friday Morning	7:30 am	**TRW Amateur Radio Club Breakfast** Building S Cafeteria - Everyone is invited Talk-in on 2 Meters

1996 AMSAT ANNUAL MEETING
&
Space Symposium

November 8 - 10, 1996

Tucson, AZ

HOLIDAY INN - City Center
181 W. Broadway Blvd. 1-(800)-448-8276

- **Forums**
 - P3D satellite developments and ground station ideas.
 - Progress reports on many new amateur radio satellites such as ASUSAT, JAS-2, SEDSAT-1, SUNSAT, Picosats, UNAMSAT-2, and TECHSAT.
 - New developments by radio amateurs in satellite operations and related fields.
- **Beginners Forums**
 A special series of presentations for the satellite newcomer covering all aspects of amateur satellites including terminology, tracking along with analog and packet satellite operations.
- **Displays**
 Displays of the latest amateur radio satellite's under development and new developments in ground station hardware and software.
- **Demonstration Stations**
 Analog and packet satellite demonstration stations operating all of the amateur radio satellites. A special opportunity for the satellite newcomer to see how easy it is to become "satellite active".
- **Kitt Peak Radio Telescope Tour**
 Special tour of the 12M millimeter wave radio telescope (60 - 350 ghz) and the 25M Very Long Baseline Array radio telescope along with selected optical telescopes on top of 7000' high Kitt peak.
- **Tucson**
 - Excellent weather in November with typical daily temperatures ranging from low 50's to mid 70's
 - Fun activities for the whole family: Desert Museum, Colossal Cave, Biosphere II, Pima Air and Space Museum, Titan Missile Museum, in addition to excellent golf and shopping .

For More Information:

Check out the **AMSAT Annual Meeting** page at: **http:/www.amsat.org/amsat/AmsatHome.html**
or

Heather Johnson, N7DZU (520) 749-5106
n7dzu@azstarnet.com

or

Larry Brown, NW7N (520) 886-1957
nw7n@amsat.org

Plan Now to Attend!

Vertical Arrays - Part 1

by Bill Shanney, KJ6GR

DXing on the lower HF bands is challenging for those of us who are confined to small properties. Getting a dipole or better yet a beam up one wavelength to achieve acceptable low angle performance is often impossible. Vertical antennas provide acceptable low angle radiation but suffer from low gain due to ground losses and the fact that they radiate equally in all azimuth directions. Vertical antenna performance can be significantly improved by using them in an array. Three or four antennas provide the capability for directional switching, about 1 S-unit of gain and 20 dB front -to-back ratio. These significant improvements can be further enhanced by elevating the array which reduces ground losses.

Dave Nelson, AB6DU got me interested in this subject. He was considering the possibility of putting an array on the roof of Building S for 40 and 80 meter DXing and contesting. Over the next few months I will present the design for an array that can be used on both bands. It is our hope that some enterprising club members will volunteer to lead the construction and installation of this array in the near future.

This month I'll discuss the performance of a 4 element array of quarter wave verticals on 40 meters. The elements are arranged in a square, one quarter wavelength on a side as shown in Figure 1.

I'm not going to spend any time on a ground mounted array. The antenna patterns are similar to an elevated design but the gain is ~ 0dBi due to high ground losses. The patterns for a four element array with equal power to each element phased as indicated are shown in Figure 2. The pattern is broad (~ 120°, 3dB) and has a reasonable front-to-back ratio. A feed technique for this type of array is shown in "Antennas and Techniques for Low Band DXing" by John Devoldere, ON4UN (ARRL, 1994). This technique allows easy switching to the four side directions.

The performance of a dipole up 80 feet is shown in Figure 3. I have roughly dotted the array performance on this plot for reference. The dipole will outperform the array most of the time but there will be instances where the array is better so it is still a worthwhile consideration.

I will show the design and performance of an 80 meter array with on eighth wave spacing next month. This preserves the mechanical configuration but complicates the feed design.

Figure 1. 40 meter Elevated Vertical Array

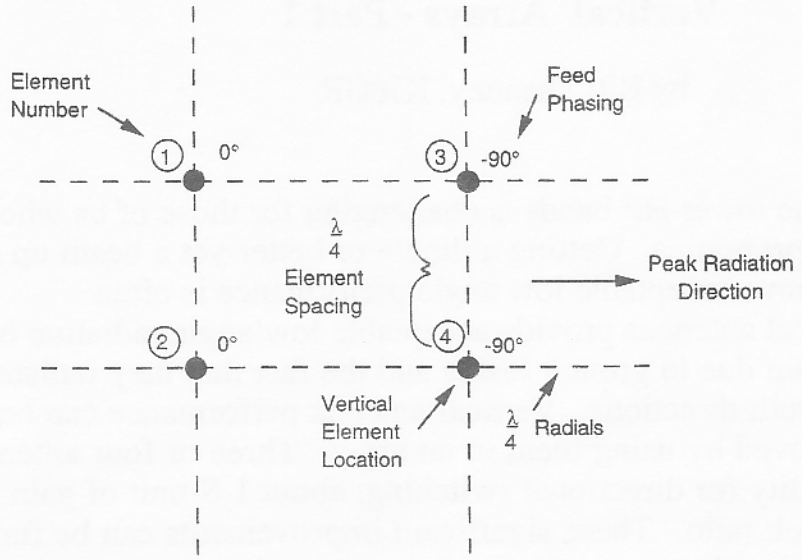


Figure 3. Performance of a 40 meter dipole up 85 feet

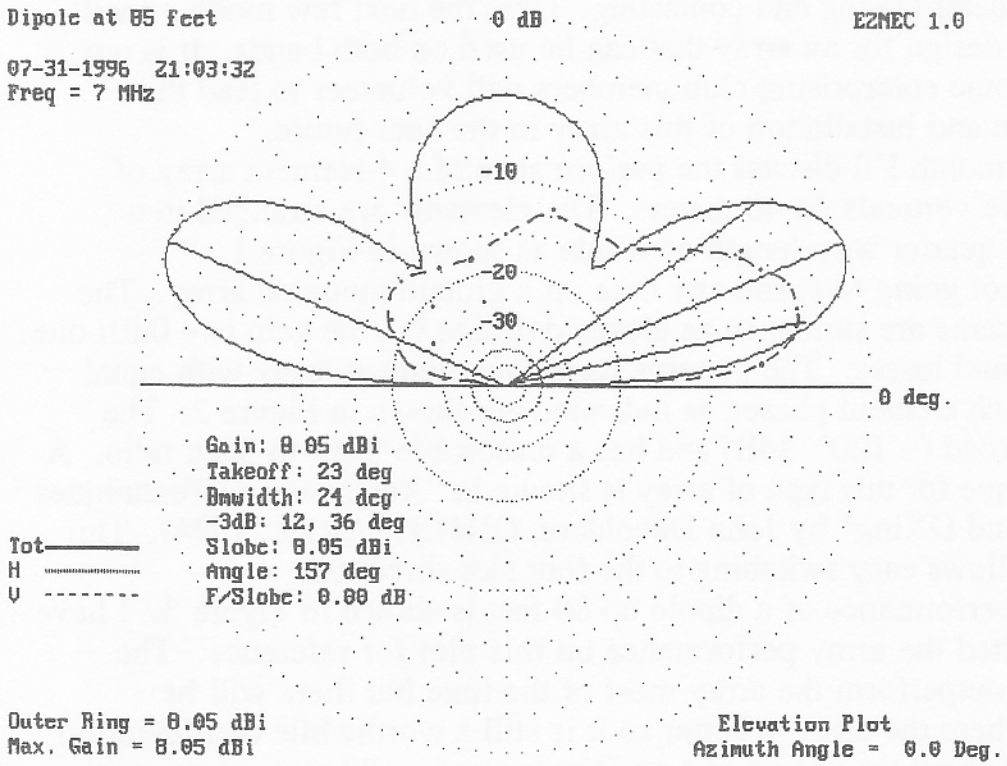
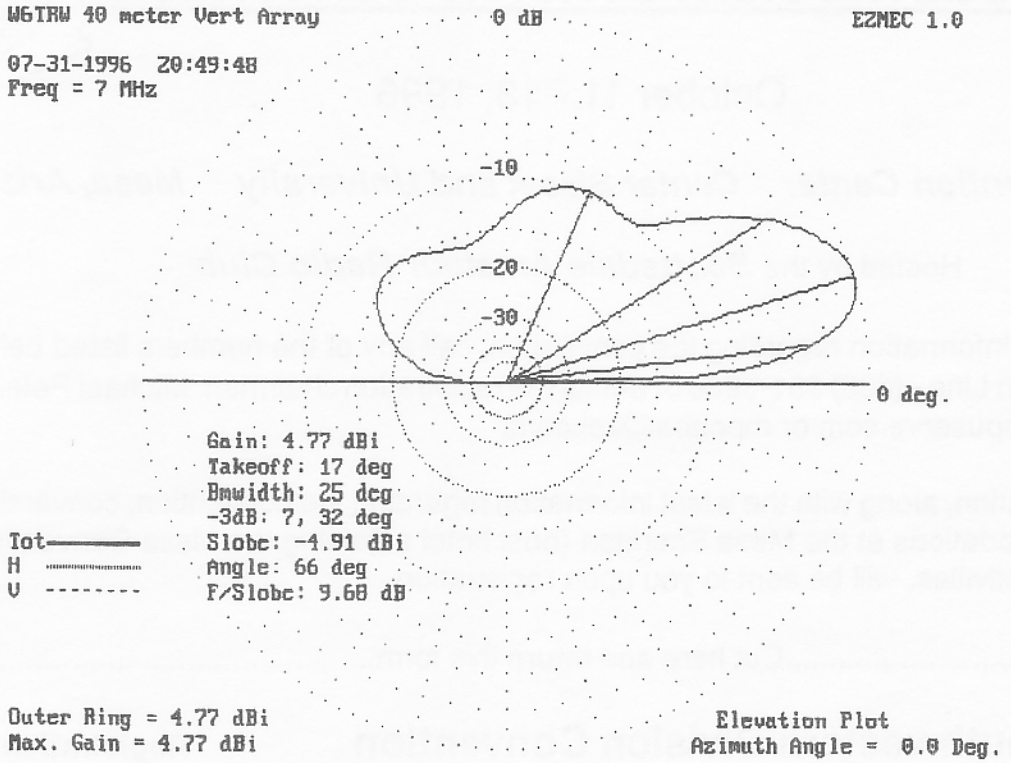
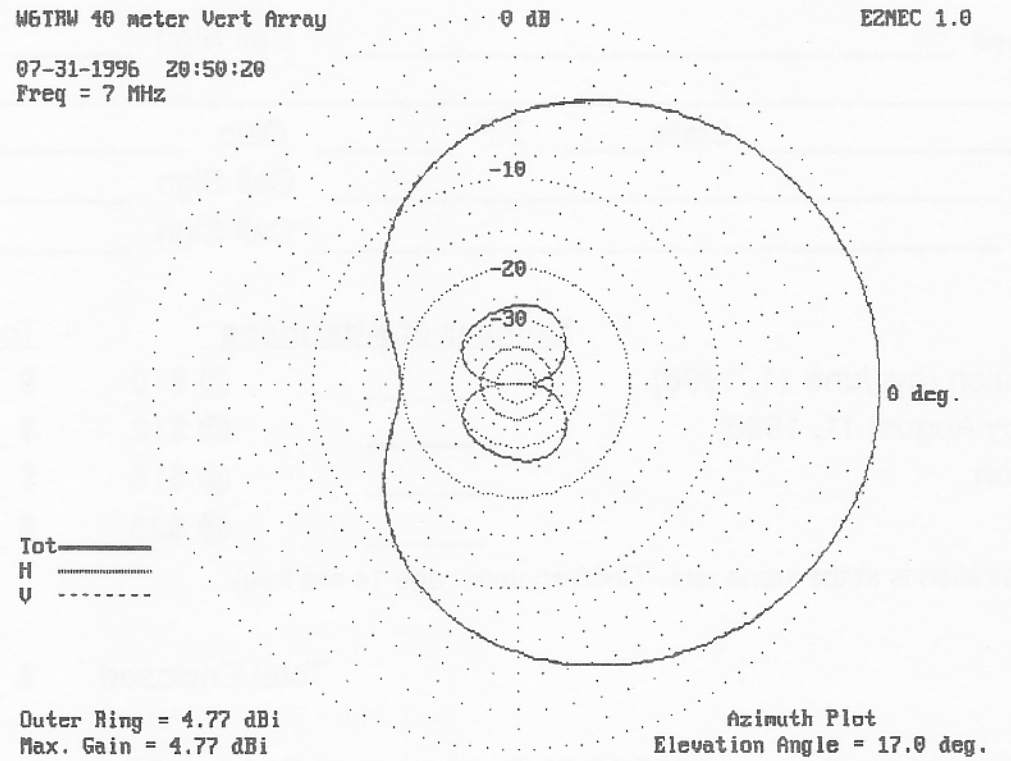


Figure 2. Performance of a 4 element vertical array up 35 feet





Note: Array performance computed with 2 radials per element, not as shown in Fig. 1.